

- 15 -

CLAIMS:

1. A composite material for acoustic or mechanical damping, comprising: a plurality of layers of fibrous material embedded in a solid material,
5 **characterised in that** the solid material has a composition which varies through a depth of the material, the composition having a relatively high proportion of a first material, being a structural composite resin, and a relatively low proportion of a second material, being a material of high hysteretic loss, at the outer surfaces of the material, and the composition having a damping region between the outer surfaces wherein the
10 composition has a relatively high proportion of the second material and a relatively low proportion of the first material, the composition, the composition of the solid material varying through a gradual change in composition between the damping region and the outer surfaces, such that the material contains no abrupt changes in composition.
- 15 2. A material according to claim 1 wherein the first material is an epoxy or polyester resin, the second material is polyurethane and the fibrous material is glass fibre matting.
3. A method for producing a composite material for acoustic or mechanical
20 damping, comprising the steps of:
 - providing at least one first fibrous layer impregnated with a first thermosetting material;
 - stacking the at least one first fibrous layer on a former;
 - providing at least one second fibrous layer impregnated with a second thermosetting
25 material;
 - stacking the at least one second fibrous layer on the stack of the first fibrous layer(s);
 - providing at least one third fibrous layer impregnated with a third thermosetting material;
 - stacking the at least one third fibrous layer on the stack of first and second fibrous
30 layers; and

- 16 -

- simultaneously heating and compressing the resulting stack of first, second and third fibrous layers to harden the thermosetting materials,

characterised in that

the second thermosetting material comprises an effective proportion of a high
5 hysteretic loss material, and the first and third materials comprise an effective proportion of a structural composite resin, further characterised in that the heating and compressing step is effective to cause the second material to diffuse or intermingle with both the first and second materials.

10 4. A method according to claim 3 wherein the first and/or third material comprises an epoxy or polyester resin

5. A method according to claim 3 or claim 4 wherein the second material comprises polyurethane.

15

6. A method according to any of claims 3-5 wherein the fibrous layers comprise glass fibre matting.

7. A method according to any of claims 3-6 further comprising the step of selecting the
20 direction of the fibres of the fibrous layers to provide a desired combination of structural strength and damping properties.

8. A material substantially as described and/or as illustrated in the accompanying drawings.

25

9. A method substantially as described.